

Claims:

What is claimed is:

1. A suspension for a bicycle comprising:
 - a bicycle frame, said frame having a bottom portion including a pedal sleeve;
 - a pedal assembly secured for rotation within said pedal sleeve and rotating about a rotational axis;
 - a swing arm pivotally secured to said frame for movement about said rotational axis;
 - 10 a lever arm attached to said swing arm; and,
 - a shock absorbing element connected to said swing arm and said frame.
2. The suspension of claim 1 wherein the lever arm extends from the pedal sleeve and rotates about the rotational axis and the lever arm and swing arm are attached together at a fixed angular displacement.
3. The suspension of claim 1 wherein the rotational axis has a fixed position relative to the frame and the pedal sleeve is rotatable about the rotational axis relative to the frame.
4. The suspension of claim 3 wherein the swing arm is fixed to the pedal sleeve and rotates with the pedal sleeve.
5. The suspension of claim 4 wherein the lever arm is fixed to the pedal sleeve and rotates with the pedal sleeve.
6. The suspension of claim 1 wherein the swing arm has a single side arm.
- 25 7. The suspension of claim 1 wherein the swing arm rotates around and relative to the pedal sleeve.

8. The suspension of claim 1 wherein the bottom portion of the frame has two sides and the shock absorbing element or lever arm is located between the two sides.

9. The suspension of claim 1 wherein the bottom portion of the
5 frame has two sides and the swing area is attached to the frame between the two sides.

10. The suspension of claim 1 wherein the swing arm is generally cantilevered and adapted to support an axle of a rear wheel in a fixed position relative the swing arm.

10 11. A rear wheel suspension system for a bicycle having,
a) a frame;
b) a pedal sleeve attached to and rotatable relative to the
frame about a rotational axis having a fixed location relative to the frame;
c) a pedal assembly secured and rotatable within the pedal
15 sleeve;
d) a trailing arm fixed for rotation with the pedal sleeve; and,
e) a shock absorbing element connecting the trailing arm to
the frame to resist rotation of the trailing arm.

12. The suspension system of claim 11 further comprising a lever
20 arm fixed for rotation with the pedal sleeve wherein the shock absorbing
element connects with trailing arm to the frame through the lever arm.

13. The suspension system of claim 12 wherein the frame has two
sides where the frame is attached to the pedal sleeve.

14. The suspension system of claim 13 wherein the lever arm or
25 shock absorbing element is located between the sides of the frame.

15. A suspension system for a bicycle comprising,
a) a frame having a bottom portion with two sides;

- b) a pedal assembly secured for rotation to the bottom portion of the frame and rotatable about a rotational axis;
- c) a trailing arm secured to the bottom portion of the frame between the two sides of the frame and pivotable about the rotational axis;

5 and,

- d) a shock absorbing element connecting the swing arm to the frame.

16. The suspension system of claim 15 wherein the shock absorbing element is connected to the swing arm through a lever arm located

10 on a line passing through the rotational axis at a fixed angular displacement of at least 45 degrees from the swing arm.

17. The suspension system of claim 15 wherein the pedal assembly rotates within a bottom bracket fixed to the frame and the swing arm rotates about a bearing surface outside of the bottom bracket.

15 18. The suspension system of claim 15 wherein the shock absorbing element is located between the sides of the bottom portion of the frame.

19. The suspension system of claim 15 wherein the sides of the frame are part of a stressed shell.

20 20. The suspension system of claim 15 wherein the swing arm has a single side arm.

21. The suspension system of claim 20 wherein the side arm is adapted to hold or includes a rear wheel hub body.

22. The suspension system of claim 20 wherein the side arm

25 comprises a portion having a channeled cross-section.

23. The suspension system of claim 20 further comprising one or more covers attached to the side arm to encloses a portion of the chain.

24. The suspension system of claim 20 wherein a portion of the side arm comprises a torsion box.
25. The suspension system of claim 15 wherein the connection between the swing arm and the frame through the shock absorbing element is releasable and, when the connection is released, the swing arm may pivot forward by more than 135 degrees.
26. The suspension system of claim 15 wherein the bottom portion of the frame includes a removable cap, the removable cap releasably securing the pedal assembly and trailing arm to the bottom portion of the frame.
27. The suspension system of claim 15 wherein the back of the trailing arm is attached to an internal rear hub shifting mechanism, the attachment including a bearing between the outside of the hub body of the shifting mechanism and the trailing arm.
- 15 28. The suspension system of claim 27 further comprising an idler wheel connected to the trailing arm and positioned to tension a chain.